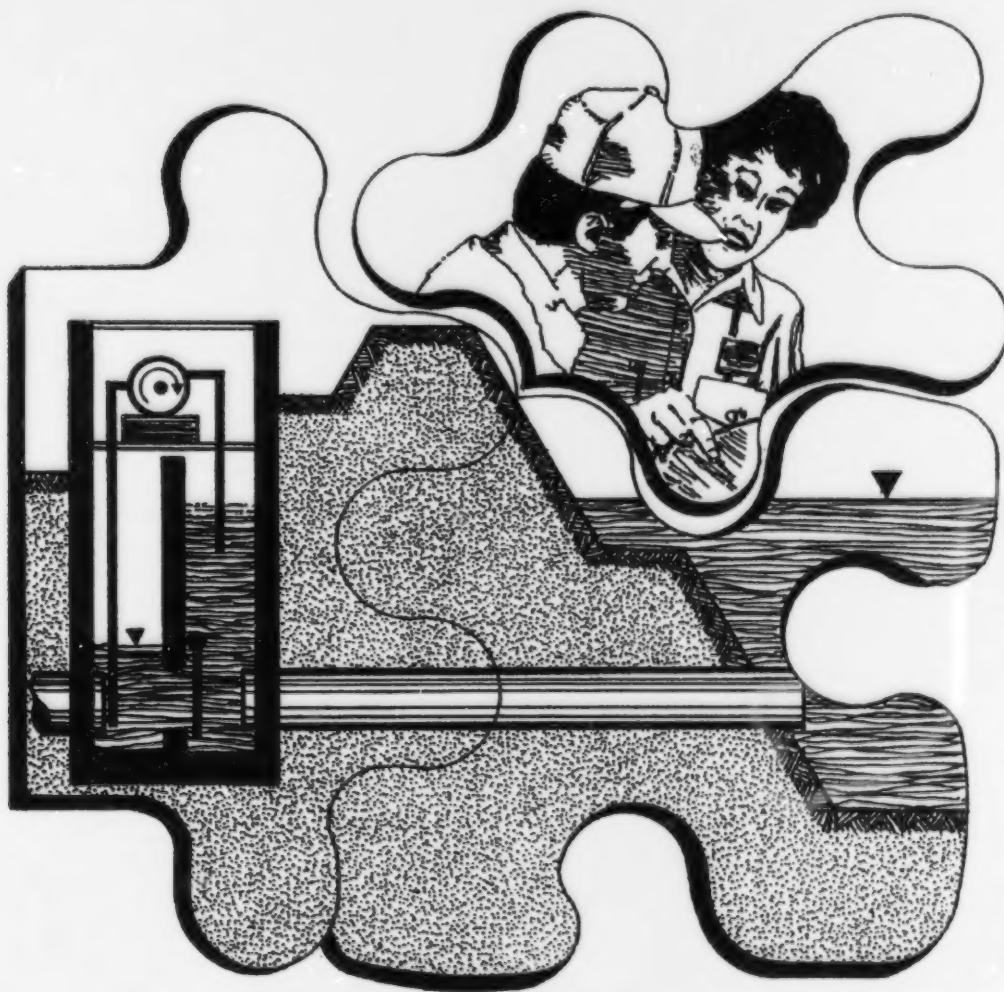


THE ANNUAL REPORT  
OF THE  
**DYKING COMMISSIONER**  
•FOR THE YEAR ENDING DEC. 31, 1999•



SUBMITTED TO:

The Hon. **Oscar Lathlin**  
**Minister**  
**Conservation**

SUBMITTED BY:

**R. Hay P. Eng.**  
**Dyking Commissioner**

Water Resources Branch  
Box 19 - 200 Saulteaux Crescent  
WINNIPEG MB R3J 3W3  
Phone: (204) 945-6496  
Fax: (204) 945-7419

March 21, 2000

FILE: 11.1.5

The Honourable Oscar Lathlin  
Minister  
Manitoba Conservation  
Room 333 Legislative Building  
450 Broadway Avenue  
WINNIPEG MB R3C 0V8

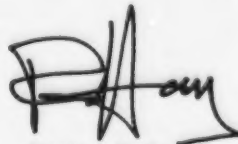
Dear Sir:

I have the privilege to submit, herewith, the Annual Report of the Dyking Commissioner as required under Section 13 of The Dyking Authority Act.

This report covers the appraisal of the Greater Winnipeg Dyking System and ancillary Pumping Stations for the 1999 calendar year, to determine its adequacy to provide flood protection for the City of Winnipeg. The Commissioner considers the maintenance of the system to be satisfactory. Recommendations are included on page 6.

Please note that the Act does not require this report to be tabled in the Legislature.

Yours truly,

A handwritten signature in black ink, appearing to read 'R. Hay', with a stylized flourish at the end.

R. Hay, P. Eng.  
Dyking Commissioner

RIAH/jb

Enclosure

THE ANNUAL REPORT  
OF THE  
DYKING COMMISSIONER  
FOR THE YEAR ENDING  
DECEMBER 31, 1999

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## 1 Acknowledgements

Evaluation of the adequacy of the dyking system is based mainly on reports provided by the staff of the City of Winnipeg and the University of Manitoba. Their cooperation in providing annual reports and technical advice is gratefully acknowledged.

## 2 The Dyking Authority Act of 1952

The Dyking Authority Act D110, passed in 1952, was intended to ensure that the dykes and pumping stations constructed subsequent to the 1950 flood were maintained in a state of readiness to combat future floods. In fact, the full title of the original Act was *An Act to Provide for the Maintenance of Dykes and Pumping Stations in Greater Winnipeg*.

While authority and control over dykes and pumping stations was vested with the city or rural municipality in which they were situated, provision was made for the appointment of a Dyking Commissioner with powers to inspect dykes and pumping stations and to order work to be undertaken to maintain an integrated system of flood defence as well as to establish the location of the line of defence.

The Dyking Commissioner is required to "before the first day of April in each year, make to the Minister a report on the administration and carrying out of the provisions of this Act during the year ending on the thirty-first day of December next preceding the making of the report, and on the condition of the dykes, pumping stations, and pumps, and their sufficiency for the purposes for which they were constructed or installed.

### **3 Changes Since 1952**

Several major changes have taken place since the passing of The Act in 1952.

1. Major flood control projects affecting the City of Winnipeg namely the Red River Floodway, Portage Diversion and Shellmouth Dam projects have been completed.
2. Urban development has taken place beyond the lines of flood defence established earlier.
3. The five cities and two rural municipalities subject to The Act have been replaced by a single city.
4. Under the Canada-Manitoba Flood Damage Reduction Agreement, Interim Flood Risk Maps designating Flood Risk Areas and Floodways in the City of Winnipeg were produced in 1980 and flood protection criteria for developments dictated by flood levels were defined.
5. The City of Winnipeg Act was amended in 1981 to recognize the designated flood risk areas and the criteria for development in flood prone areas.
6. As of January 1, 1992 the Designated Floodway Fringe Area Regulation 266/91 requires the Primary Dyke to be located, designed and constructed to the standard and elevation approved by the City Administrator and the Dyking Commissioner .

## 4 Current Issues and Actions

Changes to legislation and the dynamics of urban development give rise to issues from time to time. Present issues are:

1. Flood defence lines are continually requiring revisions to accommodate the effect of flood control/protection works and urban development.

The City is continuing to review the Primary Line of Defence (PLD) for re-designation and extensions. Plans are being prepared and submitted to the Dyking Commissioner for approval. Some preliminary proposals have been reviewed with the Commissioner as noted in the City of Winnipeg report in Appendix D. The City is nearing completion of new maps of the primary dykes on an electronic medium database. Approximately 95 percent of the required upgrading of the maps has been completed. In addition to mapping the 115 kms of primary dykes, these drawings will also identify deficiencies in the primary dyking system, the required quantity of fill material to raise the dykes to the required protection levels and the location of the sewer manholes, catch basins, outfalls and control chambers through the dyke. Areas where the dyke must be re-aligned to accommodate new development will also be included.

2. Since the 1997 "Flood of the Century", a number of initiatives have been undertaken with respect to enhancing the level of flood protection for the City. All have implications for future administration of The Dyking Authority Act.

- i) The International Joint Commission initiated comprehensive studies of the City's flood defence systems that identified vulnerabilities and proposed strategies for flood risk reduction. The final report developed, to the feasibility stage, details and estimate costs for several candidate options.

- ii) The City has entered into an agreement with both the federal and provincial governments to provide enhanced secondary flood protection works (i.e. outside the Primary Line of Defence). The agreement, whose term extends to March 31, 2003, provides a total of \$11.1 M for upgrades to both individual property site flood protection and community ring dykes within the City Limits.

The Dyking Commissioner is a member of the Technical Advisory Committee coordinating the implementation of the agreement, as several of the proposed works lie within the designated Floodway Fringe of the Red River.

- iii) Further to a recommendation from the Manitoba Water Commission-June 1998 Report, the Province presided over a committee established to review the operating rules for the Red River Floodway. The ad hoc Floodway Operation Review Committee (FORC) was comprised of representatives from Manitoba Water Resources Branch, the Federal government (PFRA), the City of Winnipeg and the Rural Municipal Councils of the three



municipalities immediately upstream of the Floodway Inlet. The Committee's final report, including recommendations for alterations to the existing Floodway Operating Rules has been presented to the Minister of Conservation for review and consideration. The report recommendations would impact flood fighting operations for the Primary Dykes. As such, the next report of the Dyking Commissioner will include reference to operational changes precipitated by adoption of any of the report recommendations.

## **5 Inspection of Facilities**

The City and the University of Manitoba have ongoing inspection and maintenance programs. The programs for 1999 are described in detail in the reports under Appendix D.

I have been impressed with the degree of care which the City and University apply to the maintenance of their respective flood protection facilities.

## **6 Reports by the City of Winnipeg and the University of Manitoba**

A questionnaire was sent to the City and to the University requesting information for the purpose of preparing this report. A copy of the request and questionnaire is included in Appendix C. The replies to the questionnaire, included in Appendix D, indicate that inspections were carried out, and that necessary maintenance work was carried out.

## **7 Primary Dyking System**

### **1. Pumping Stations and Gates**

Normal annual operation and maintenance activities were undertaken on the pumping stations and gate chambers in 1999. The City's Water and Waste Department continued to upgrade the lift station alarm and monitoring systems and flap and positive gate configurations at the automated stations. A new outfall and gate chamber were also constructed. The specific details of these programs are outlined in the attached Appendix D.



The University of Manitoba completed repair and modifications of a separated discharge line from their number one outfall and began construction of a new sewer outfall gate structure.

## **2. Primary Line of Defence**

The Red River peaked at 17.4 feet above City Datum at James Avenue on April 10, 1999. As such, no closure or raising operations were implemented with respect to the primary or secondary dykes. Operations were confined to normal gate closures and sewer pumping.

## **8 Additional Works Constructed**

No major additional works were undertaken in 1999.

## **9 Recommendations**

It is recommended that:

1. The City of Winnipeg undertake the minor remaining work involved for completion of the 'Autocad' plans of the Primary Line of Defense. Comprehensive updated plan/profiles in modern revisable format will prove invaluable for both future flood fighting operations and for implementation of pending flood protection system enhancement programs.
2. The City of Winnipeg continue in it's efforts to complete all necessary rehabilitation to the primary dykes, pump stations, gates and outfalls through the primary dyke, to maintain the integrity of the system.
3. The City of Winnipeg, with the assistance of the Dyking Commissioner, ensure that permanent modifications to the secondary dykes do not detrimentally impact the Designated Floodway of the Red River channel, the primary dykes or local drainage outlets.

## **10 Appendix A**

### **City of Winnipeg List of Flood Pumping Stations and Gate Chambers**

## CITY OF WINNIPEG FLOOD CONTROL FACILITIES - 1999

### FLOOD PUMPING STATIONS:

1 Newton	2 Linden	3 Jefferson
4 Polson	5 Monroe	6 St. John
7 Hart	8 Selkirk	9 Syndicate
10 Archibald Underpass	11 Galt	12 Assiniboine
13 Cornish	14 Assiniboine	15 Colony
16 Mission	17 Aubrey	18 Clifton
19 Despina	20 Laverendrye	21 Dumoulin
22 Ash	23 Marion	24 Jessie
25 Metcalfe	26 Baltimore	27 Mager Drive
28 Cockburn	29 Turnbull Drive	30 St. James Underpass
31 Roland (not in index)	32 Larchdale	33 Bannatyne
34 Mayfair		

### GATE CHAMBERS:

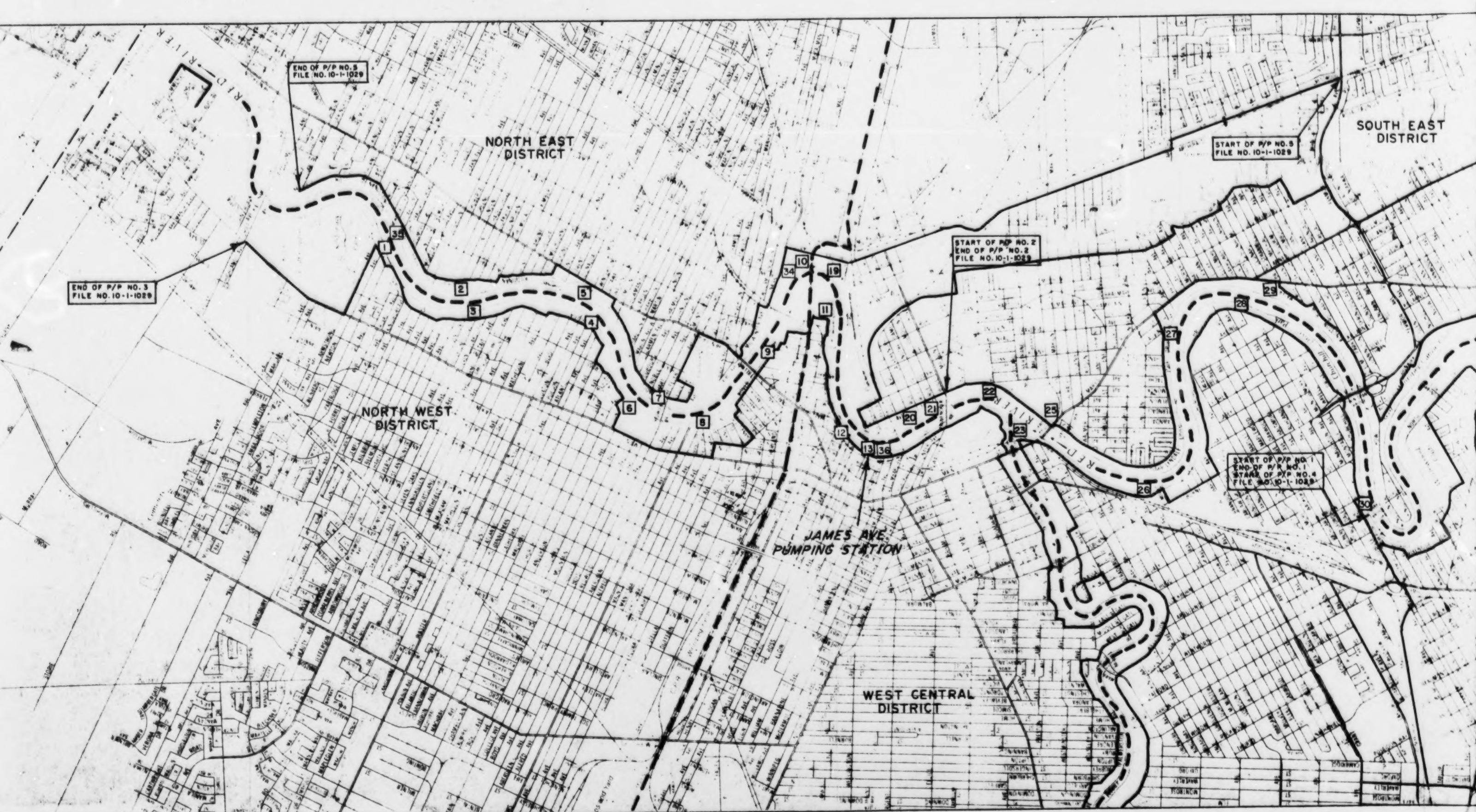
Rainbow Stage	Churchill Drive Underpass	Dunham Road
St. Mary's Road	Churchill High School	Plaza Drive
Armstrong	Bredin Drive	Pulberry
Ft. Rouge Park	Chataway	Seel & Fennel
Maryland	Deer Lodge Place	Darcy 43 m N. of Glengarry
Renfrew	Douglas Park	Glasgow
St. Norbert X-Kalay	Ferry Road	Summerview Lane
Eccles (new 1200mm SRS)	Kildonan Park	South St. Vital Ret. Basin
Wildwood Golf Course	Lemay & Lord	N. St. Boniface LDS
X-Kalay Drive Culvert	Olive Street	Shier Drive
Darcy @ Glengarry	Conway	Barker
Crane @ Southdrive (WWS)	Cranestorm	Waverley Lakes
Kilkenny N. of Radcliffe	Donald Street	Arlington
N.E. Interceptor	Dowker Outfall	Calrossie Outfall
Ruby	Osborne @ St. Vital Bridge G.C.	Conway
Pembina & Crane	Hargrave Street	Moore
Aubrey (Storm)	Inkster	Strathmillan
Kingston Row CSO	Kennedy	Wexford
Trappiste @ Pembina	Kingston Row Underpass	Killarney
Assiniboine E.	Riviera Crescent Outfall	Rowandale
Assiniboine W.	Water Avenue	Ridgedale
Burrows	Clarence & Hamlin	River Point Pl.
Calrossie @ Riverside	Colony	Clifton Overflow (Omands Cr.)
Ducharme @ Villeneuve	Dieppe	Forks
Eccles (old 750mm SRS)	Hawthorne	Heritage
Kilkenny & Rice	Parkside 30"	N.E. Interceptor Manhole
Lombard	Parkville	King Edward Storm
McDermot	Sommerville & Beaumont	Kingston Row @ Elm Park
Spence	St. Boniface Hospital MH	Riverbend 90"
Somerset @ Riverside	Kildare	Tylehurst
Bredin Drive	Riverdale	Lot 16 Gate
Canora	McLeod Cr. & Kildonan Cor.	Fermor
Guay	Donacaster	

## **11 Appendix B**

**City of Winnipeg Maps - Showing District Boundaries,  
Flood Defence Lines and Pumping Station Locations**







END OF P/P NO. 5  
FILE NO. 10-1-1029

NORTH EAST  
DISTRICT

START OF P/P NO. 5  
FILE NO. 10-1-1029

SOUTH EAST  
DISTRICT

END OF P/P NO. 3  
FILE NO. 10-1-1029

START OF P/P NO. 2  
END OF P/P NO. 2  
FILE NO. 10-1-1029

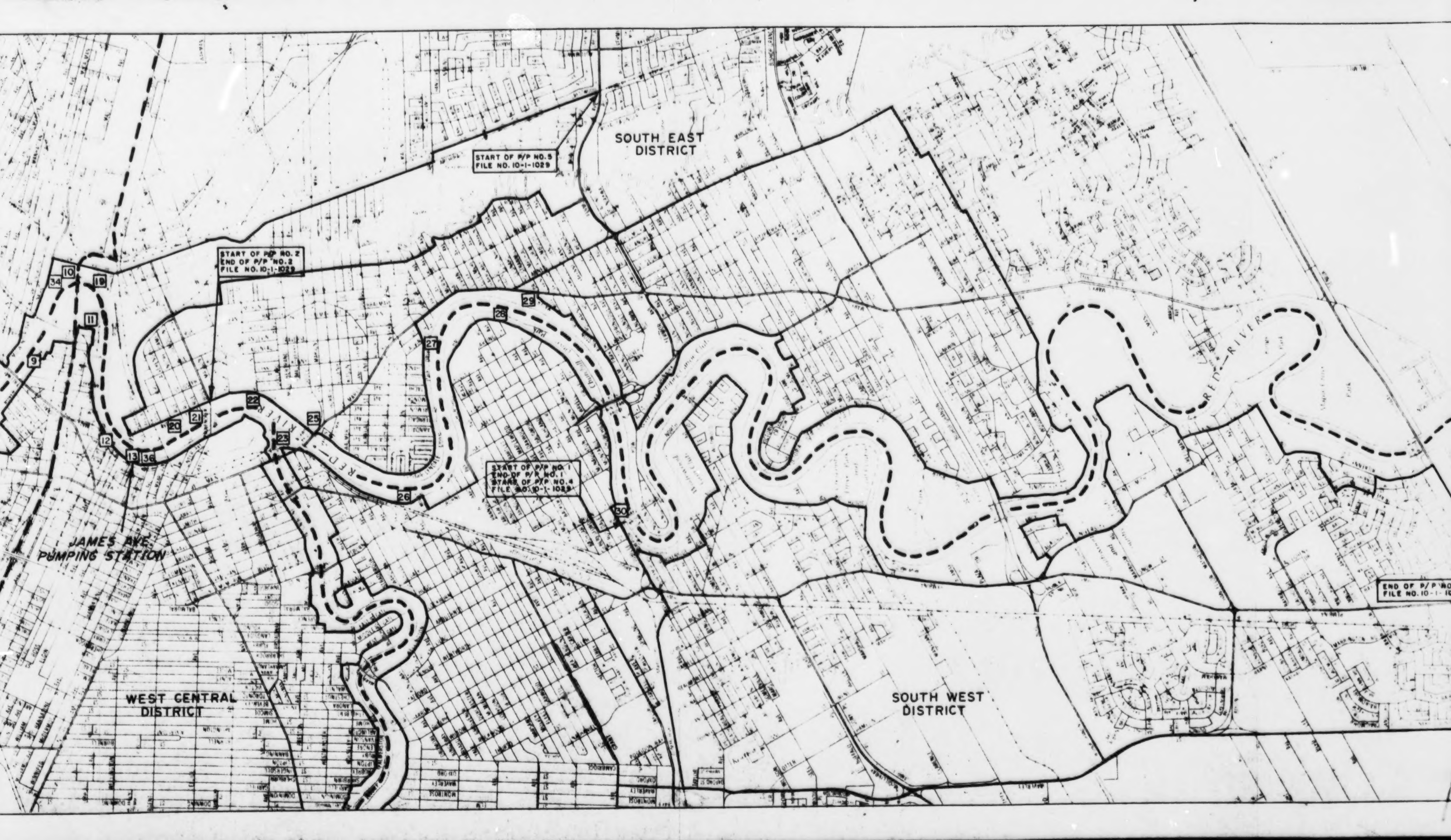
NORTH WEST  
DISTRICT

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START OF P/P NO. 4  
FILE NO. 10-1-1029

JAMES AVE  
PUMPING STATION

WEST CENTRAL  
DISTRICT





SOUTH EAST  
DISTRICT

START OF P/P NO. 3  
FILE NO. 10-1-1029

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FILE NO. 10-1-1029

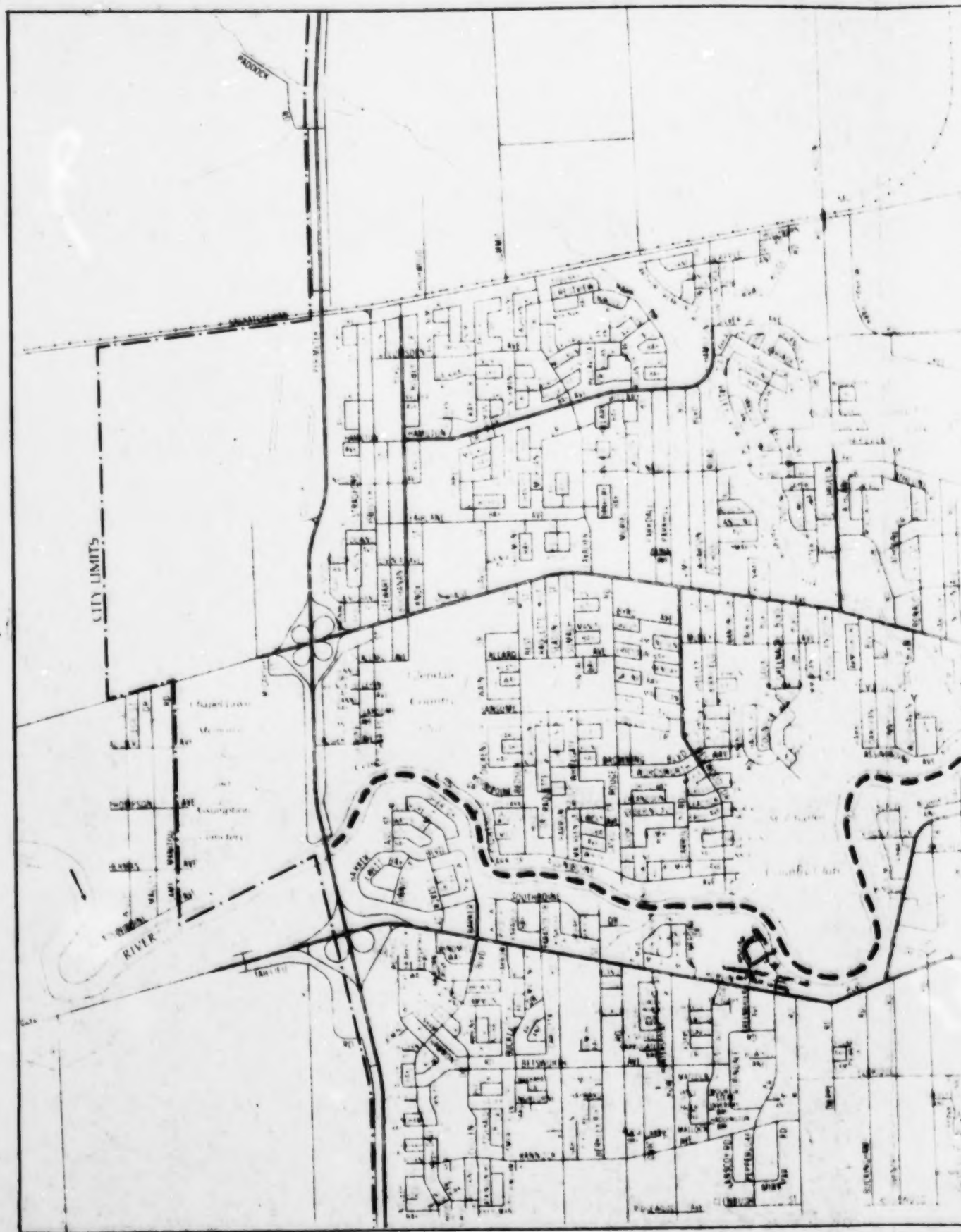
JAMES AVE.  
PUMPING STATION

WEST CENTRAL  
DISTRICT

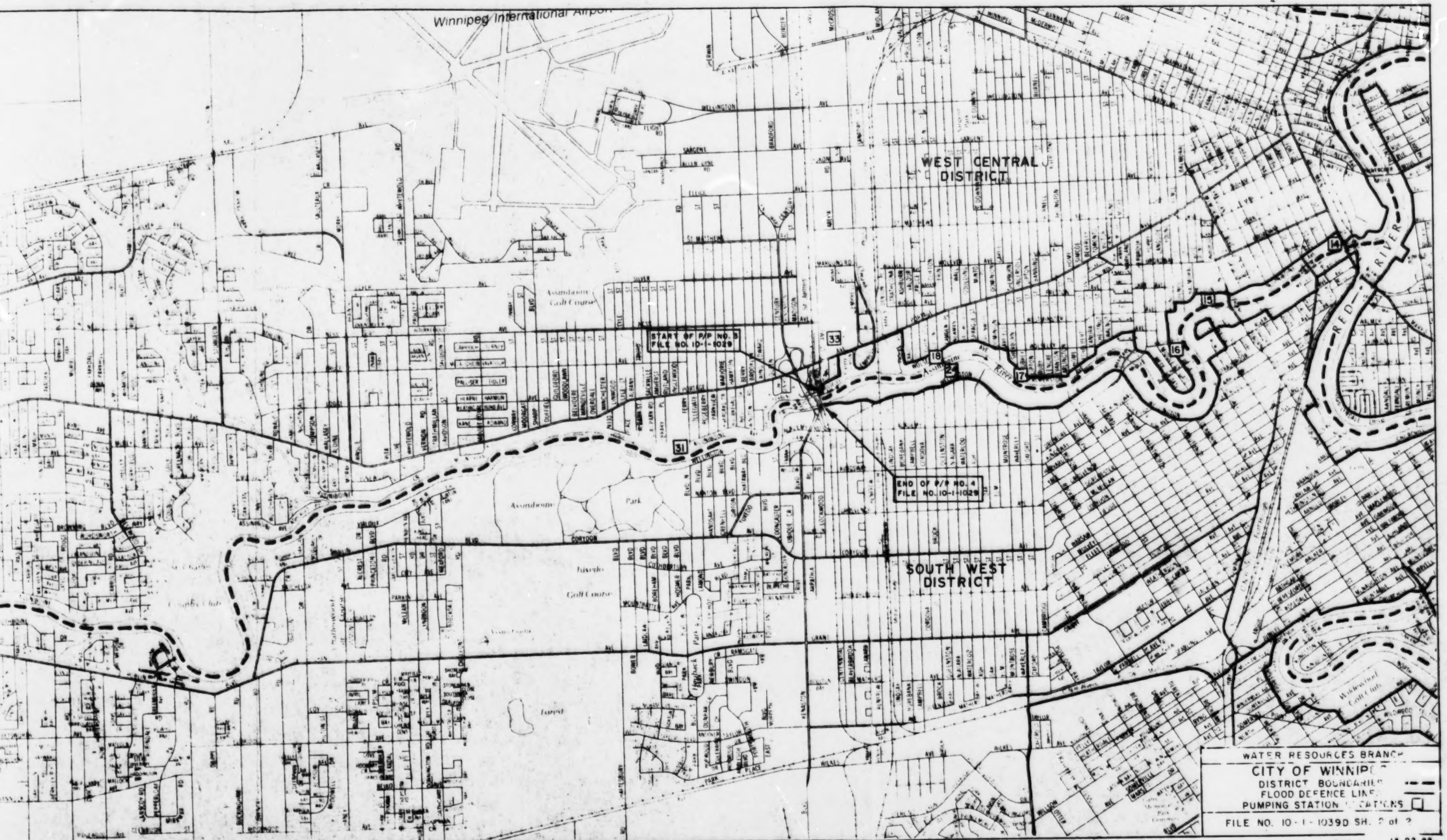
SOUTH WEST  
DISTRICT











WATER RESOURCES BRANCH  
CITY OF WINNIPEG  
DISTRICT BOUNDARIES  
FLOOD DEFENCE LINES  
PUMPING STATION LOCATIONS  
FILE NO. 10-1-1039D SH. 2 of 2

## 12 Appendix C

Copy of Questionnaire to:

The City of Winnipeg  
and  
The University of Manitoba

Water Resources Branch  
Box 19 - 200 Saulteaux Crescent  
Winnipeg, Manitoba  
R3J 3W3  
Tel: (204) 945-6496  
Fax: (204) 945-7419

December 14, 1999

File: 11.1.5

Ms. Debbie McCallum  
Associate Vice-President  
Ancillary & Physical Resources  
208 Administration Building  
University of Manitoba  
WINNIPEG MB R3T 2N2

Dear Ms. McCallum:

***RE: Dyking Commissioner's 1999 Annual Report***

The Dyking Authority Act, Section 15, requires that:

"The commissioner shall, before the first day of April in each year, make to the minister a report on the administration and carrying out of the provisions of this Act during the year ending on the thirty-first day of December next preceding the making of the report, and on the condition of the dykes, pumping stations, and pumps, and their sufficiency for the purposes for which they were constructed or installed."

To assist me in making this report I request that you supply me with a report on the dyking system and pumping stations under your jurisdiction for the 1999 calendar year **by February 25, 2000**. For convenience, I am including a standard questionnaire similar to that used in previous years.

Yours truly,

Rick Hay, P. Eng.  
Dyking Commissioner

RIAH/jb

cc: Steven Topping, Director  
Water Resources Branch

Enclosure

Water Resources Branch  
Box 19 - 200 Saulteaux Crescent  
Winnipeg, Manitoba  
R3J 3W3  
Tel: (204) 945-6496  
Fax: (204) 945-7419

December 14, 1999

File: 11.1.5

Mr. Barry McBride  
Director, Water and Waste Department  
The City of Winnipeg  
101 - 1155 Pacific Avenue  
WINNIPEG MB R3E 3P1

Dear Mr. McBride:

***RE: Dyking Commissioner's 1999 Annual Report***

The Dyking Authority Act, Section 15, requires that:

"The commissioner shall, before the first day of April in each year, make to the minister a report on the administration and carrying out of the provisions of this Act during the year ending on the thirty-first day of December next preceding the making of the report, and on the condition of the dykes, pumping stations, and pumps, and their sufficiency for the purposes for which they were constructed or installed."

To assist me in making this report I request that you supply me with a report on the dyking system and pumping stations under your jurisdiction for the 1999 calendar year **by February 25, 2000**. For convenience, I am including a standard questionnaire similar to that used in previous years.

Yours truly,

Rick Hay, P. Eng.  
Dyking Commissioner

RIAH/jb

cc: Steven D. Topping, Director  
Water Resources Branch

Enclosure

## 13 Appendix D

### Replies to Questionnaire





# THE CITY OF WINNIPEG - VILLE DE WINNIPEG

WATER AND WASTE DEPARTMENT • SERVICE DES EAUX ET DES DÉCHETS  
FINANCE AND ADMINISTRATION DIVISION  
DIVISION DES FINANCES ET DE L'ADMINISTRATION

101 - 1155 PACIFIC AVENUE  
1155, AVENUE PACIFIC, PORTE 1C  
WINNIPEG, MANITOBA  
R3E 3P1

FAX/TÉLÉC.: (204) 986-374

February 25, 2000

Our File No.: 020-08-03-00-00

Manitoba Department of Conservation  
Box 19  
200 Saulteaux Crescent  
Winnipeg, Manitoba  
R3J 3W3

**ATTENTION: MR. R. HAY, P.ENG., DIKING COMMISSIONER**

Dear Mr. Hay:

**RE: DIKING COMMISSIONER'S 1999 ANNUAL REPORT**

In reply to your letter of December 14, 1999, please find attached the 1999 Flood Activity Report of the Water and Waste Department and the Public Works Department with regard to Flood Pumping Stations and the Diking System within the City of Winnipeg.

Yours truly,

Barry MacBride, P.Eng.  
Director

AED:jb  
Attachment

GAC\WPD\DC-REP99\RICK-HAY.WPD

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### **1999 Flood Activity Report for The City of Winnipeg**

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## **1.0 THE CITY OF WINNIPEG FLOOD CONTROL REPORT**

The City of Winnipeg, Water and Waste Department is responsible for the Primary Line of Defence (primary diking system) and the flood pumping stations and associated works within the City of Winnipeg. The following report summarizes the operations of these facilities for the 1999 calendar year.

Throughout the year, all flood pumping stations were inspected once per week by the Collection System crews of the Water and Waste Department. All stations were checked for temperature, basement flooding and vandalism. All problems were repaired as soon as possible.

Commencing in the month of February, all stations were given a complete maintenance check to ensure that these facilities were ready for operation when required. This annual servicing includes:

- i) lubrication and operation of all positive gates on sanitary, storm and combined sewers;
- ii) inspection of all wet well floats;
- iii) lubrication and operation of all pumps and equipment within the station;
- iv) inspection of all electrical main boxes, starter boxes and motors;
- v) inspection of all high voltage transformers and equipment;
- vi) inspection of automated control system, where installed.

The Red River reached a peak of 17.4 feet above City datum at James Avenue on April 10, 1999. The river receded slowly, with periodic rises until finally reaching normal summer water level on July 29, 1999, at which point, flood control operations were discontinued. A second crest of 9.8 feet above James Avenue Datum occurred on September 15<sup>th</sup>. The extended high water period, and second crest was the result of numerous heavy rainfalls throughout the Red River Basin during the summer of 1999. The graph on page 3 illustrates the 1999 high river level events, by plotting daily river levels during the spring and summer high river level period. The table on pages 4 through 7 summarizes the flood activities for 1999. River elevations shown on these tables are imperial and are recorded in James Avenue stages. James Avenue datum (0 feet) is 727.57 feet above sea level.

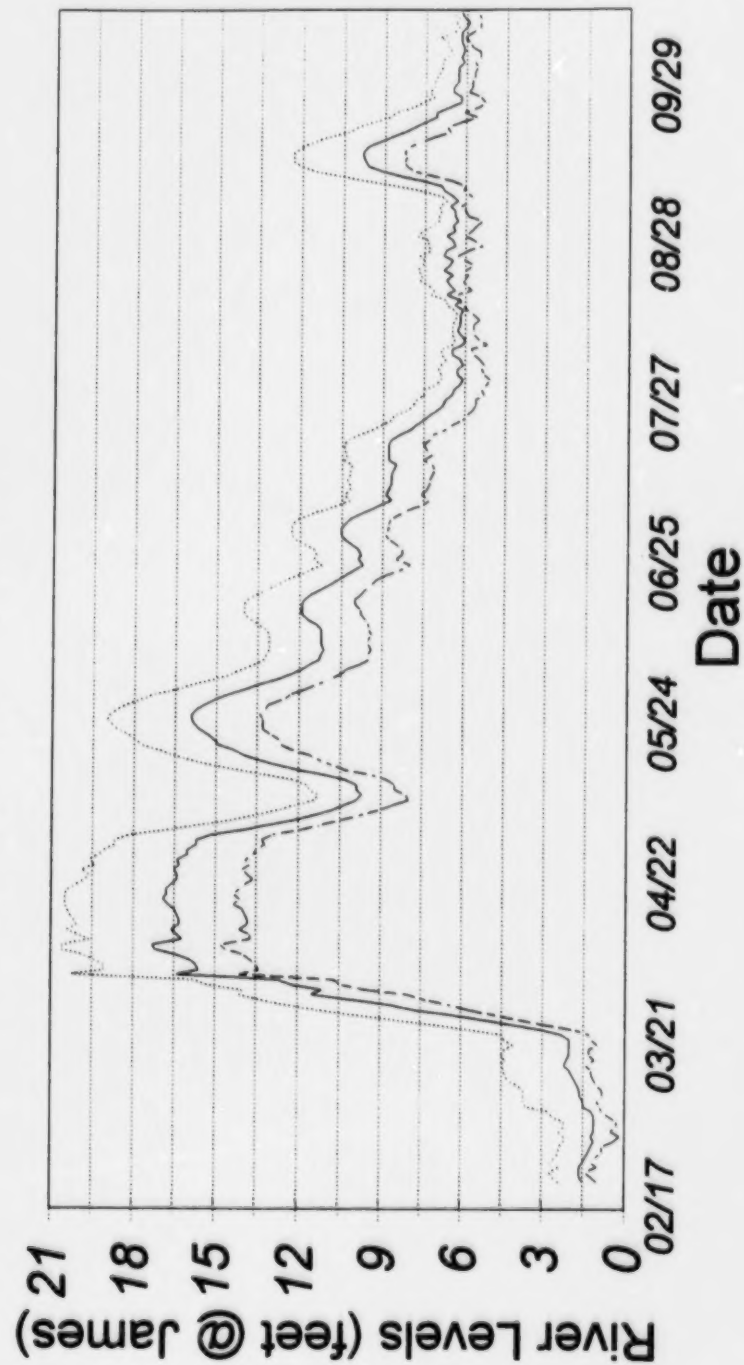
During the months of October and November, all flood pumping stations were winterized in conjunction with the routine weekly checks. Twenty-eight (28) of the City's thirty-four flood pumping stations are now automated. The automated stations are activated at or below James Avenue elevation 20.0'. Continued upgrading of the City's flood and lift station alarm and monitoring system also took place in 1999, resulting in improved data availability and offering the potential for enhanced operations. The Water and Waste Department is continuing with its program to evaluate and upgrade the configuration of the flap and positive gates at the automated stations.

During 1999, river levels were recorded at James Avenue, and the Bishop Grandin (Route 165) and Chief Peguis bridges. Generally, flood operations proceed on the basis of forecast river levels at James Avenue.

The Water and Waste Department has continued in its efforts to upgrade the information provided in the Flood Control Manual.

# 1999 FLOOD LEVELS

February 22 - October 14



Chief Peguis

James

Bishop G.

## THE CITY OF WINNIPEG WATER & WASTE DEPARTMENT ANNUAL FLOOD ACTIVITY REPORT 1999

FLOOD PUMPING STATION	GATE CHAMBER	ACTIVATION/GATE CLOSED			DEACTIVATION/GATE OPENED		
		DATE	TIME	RIVER ELEV	DATE	TIME	RIVER ELEV
	St. Mary's Rd.	99 03 30	15:25	10.7	99 07 07	9:55	9.1
	Rainbow Stage	99 03 26	15:30	5.6	99 07 07	13:37	9.1
	Armstrong Crossover	99 07 16	08:35	8.8	99 03 26	15:00	5.6
Fort Rouge Park		99 03 26	15:15	8.6	99 07 07	09:15	9.1
Marion		99 03 26	15:00	5.6	99 07 26	13:30	7.0
Despins		99 03 26	14:40	5.6	99 07 16	10:15	8.8
	St. Norbert X-Kalay	99 03 29 99 07 02	09:30 11:00	8.7 10.5	99 06 26 99 07 06	09:00 09:30	9.4 9.5
	Wildwood Golf Course	99 03 30	N/A	9.9	99 07 08	N/A	8.8
	Aubrey (storm)	99 03 31 99 05 17	13:10 11:05	11.7 13.6	99 05 05 99 06 04	10:55 09:00	12.2 11.9
	Ruby	99 03 31 99 05 17	12:30 11:45	11.7 13.6	99 05 05 99 06 03	09:55 13:00	12.2 12.3
	Trappiste @ Pembina	99 04 03	N/A	12.6	99 05 03	N/A	14.1
Baltimore		99 04 03 99 05 17	10:40 08:50	13.0 13.5	99 05 04 99 06 02	09:00 10:00	13.1 12.8
LaVerendrye		99 03 30 99 05 13	10:20 13:15	10.1 10.4	99 05 10 99 07 07	09:20 08:40	9.7 9.1
Jefferson		99 03 31 99 05 14	14:00 13:12	12.3 11.2	99 05 06 99 06 04	11:25 10:50	11.4 11.9
Linden		99 03 31 99 05 14	14:20 13:30	12.3 11.2	99 05 06 99 06 04	13:30 11:25	11.2 11.9



THE CITY OF WINNIPEG  
WATER & WASTE DEPARTMENT  
ANNUAL FLOOD ACTIVITY REPORT  
1999

FLOOD PUMPING STATION	GATE CHAMBER	ACTIVATION/GATE CLOSED			DEACTIVATION/GATE OPENED		
		DATE	TIME	RIVER ELEV	DATE	TIME	RIVER ELEV
Mager Dr.		99 03 31	14:15	12.3	99 05 06	09:15	11.4
		99 05 14	14:00	11.2	99 06 04	09:55	11.9
Metcalf		99 03 31	14:40	12.3	99 05 06	09:30	11.4
		99 05 14	13:50	11.2	99 06 04	09:40	11.9
	Burrows	99 04 03	12:00	13.0	99 05 03	10:30	14.1
		99 05 17	14:25	13.6	99 05 31	15:30	13.9
	Eccles (old 750mm SRS)	99 04 03	10:30	13.0	99 05 03	09:15	13.9
	McDermot	99 04 03	13:00	13.0	99 05 05	13:30	14.1
		99 05 17	13:42	13.6	99 05 31	13:30	13.9
	Pembina & Minerva	99 04 03	12:00	13.0	99 04 28	10:00	16.0
Cockburn		99 04 03	11:00	13.0	99 05 04	09:15	13.1
		99 05 17	09:15	13.5	99 06 02	09:40	12.8
Newton		99 04 03	11:40	13.0	99 05 04	11:00	13.0
		99 05 17	11:15	13.4	99 06 02	09:00	12.8
Turnbull Drive		99 04 28	09:45	16.0	99 04 15	10:45	16.3
Archibald Underpass		99 04 03	14:10	13.8	99 05 03	09:45	13.9
		99 05 21	15:00	15.1	99 05 28	13:45	15.3
Bannatyne		99 04 03	13:35	13.8	99 05 03	10:40	13.9
		99 05 18	10:10	14.0	99 05 31	13:00	14.0
	Bredin Drive (set up pump)	99 04 01	09:45	11.2	99 04 30	13:30	15.7
	Canora	99 04 03	16:30	14.8	99 05 03	09:30	14.1
Hart		99 04 03	14:45	14.5	99 05 03	14:15	13.7
		99 05 18	10:20	14.0	99 05 31	11:10	14.0
Syndicate		99 04 03	14:00	13.8	99 05 03	11:00	13.9
		99 05 18	09:45	14.0	99 05 31	10:25	14.0

THE CITY OF WINNIPEG  
WATER & WASTE DEPARTMENT  
ANNUAL FLOOD ACTIVITY REPORT  
1999

FLOOD PUMPING STATION	GATE CHAMBER	ACTIVATION/GATE CLOSED			DEACTIVATION/GATE OPENED		
		DATE	TIME	RIVER ELEV	DATE	TIME	RIVER ELEV
Dumoulin		99 04 03	16:05	14.9	99 05 03	09:55	13.9
		99 05 22	19:50	15.5	99 05 31	09:00	14.0
Galt		99 04 03	15:50	14.9	99 05 03	10:50	13.9
		99 05 22	18:15	15.5	99 05 31	13:15	14.0
Polson		99 04 03	15:30	16.2	99 05 03	13:10	13.7
Assiniboine		99 04 06	20:00	15.7	99 04 28	14:10	16.0
Colony		99 04 06	16:30	15.7	99 04 28	13:35	16.0
Mayfair		99 04 06	21:00	15.7	99 04 28	14:05	16.0
Roland		99 04 09	19:10	17.1	99 04 11	13:30	16.2
Aubrey		99 04 06	17:15	15.7	99 04 28	13:30	16.0
Ash		99 04 06	18:00	15.7	99 04 28	14:30	16.0
Jessie		99 04 06	13:00	15.7	99 04 28	13:00	16.0
Mission		99 04 06	18:30	15.7	99 04 28	14:30	16.0
St. James Underpass		99 04 06	19:45	15.7	99 04 27	09:05	16.4
	Chataway	99 04 03	11:00	13.0	99 04 07	15:00	16.0
	Deer Lodge Place	99 04 04	15:00	16.0	99 04 23	10:15	16.4
	Douglas Park	99 04 04	14:45	16.0	99 04 23	10:00	16.4
	Lemay and Lord	99 04 03	17:10	15.0	99 05 03	N/A	14.1
	Donald Street	99 04 09	09:30	17.2	99 04 11	14:45	16.2



THE CITY OF WINNIPEG  
WATER & WASTE DEPARTMENT  
ANNUAL FLOOD ACTIVITY REPORT  
1999

FLOOD PUMPING STATION	GATE CHAMBER	ACTIVATION/GATE CLOSED			DEACTIVATION/GATE OPENED		
		DATE	TIME	RIVER ELEV	DATE	TIME	RIVER ELEV
	Hargrave Street	99 04 07	10:00	15.9	99 07 26	13:30	7.0
	Inkster	99 04 09	10:00	17.2	99 07 26	13:30	7.0
	Kennedy	99 04 07	10:30	15.9	99 07 26	13:10	7.0
	Kingston Row Underpass	99 04 08	N/A	16.6	99 04 27	N/A	16.4
	Water Avenue	99 04 09	09:00	17.2	99 04 11	14:00	16.2
	Hawthorne	99 04 09	20:10	17.1	99 04 11	12:45	16.2
	Lannoo & William Marshall	99 04 07	16:30	16.1	99 04 09	11:00	17.2
	Shier Drive	99 04 09	11:15	17.2	99 04 12	09:30	16.3
	Water Avenue	Not known	Not known	Not known	98 04 03	09:15	15.2

## **2.0 EXTENSIONS AND REDESIGNATIONS OF THE PRIMARY LINE OF FLOOD DEFENCE**

### **2.1 East Area**

- 2.1.1 Kildonan Drive Dike - Investigations providing for extension of the Primary Line of Defence north of the Bergen cut-off are on-going, in association with Development applications on the cut-off. On February 13, 1991, the City was granted a dike easement through the lands zoned Park on the Edgewood Estates' property, north of the Bergen cut-off and at the north end of Kildonan Drive. On February 17, 1992, the Diking Commissioner granted approval-in-principle for the designation of lands through Edgewood Estates' property as Primary Line of Flood Defence. Finalization of the easement agreement is pending upon review by the property owner.

During the 1997 Spring Flood event, a permanent earth dike was constructed through the Edgewood Estates' property extending from the Kildonan Drive right-of-way at the South to the existing embankment of the Chief Peguis Trail to the North. On November 8, 1999, the Water and Waste Department requested the Diking Commissioner's approval-in-principle for designation of the dike as per drawings described in Section 3.0.

- 2.1.2 Canoe Club Condominium Complex - Construction of the proposed condominium necessitated relocation of the Primary Line of Defence (PLD). On January 28, 1992, the Diking Commissioner granted approval-in-principle for the relocation of the PLD. On September 22, 1992, a Supplemental Lease Agreement was executed for the proposed PLD relocation and the existing PLD. Once the Consultant provides an as-constructed drawing, the Water and Waste Department will be proceeding with application for redesignation.
- 2.1.3 Evans Street Dike - Land acquisition of private lands along the west Seine River bank is essentially complete. Land acquisition negotiations are on-going for private lands along the east Seine River bank. Once secured, the lands will accommodate relocation of the Seine River at a bend, and stabilization and reconstruction of Evans Street from Gareau Street to Deniset Street for its proposed designation as a Primary Line of Defence. Some 200 dwellings and several sewer overflows will be added to the City's flood protection system through this initiative.
- 2.1.4 Normand Park Development Dike - The most recent extension of the primary dike along the north limit of the Normand Park Development was completed in December, 1989; however deficiencies were only rectified in November, 1992. Certificates were issued for the dikes in the last two of the five developments. On November 8, 1999, the Water and Waste Department requested the Diking Commissioner's approval-in-principle for designation of the dike as per the drawings described in Section 3.0.

2.1.5 St. Anne's Road Dike - On November 8, 1999, the Water and Waste Department requested the Diking Commissioner's approval-in-principle for designation of the dike as per the drawings described in Section 3.0.

2.1.6 St. Mary's Road Dike - On November 8, 1999, the Water and Waste Department requested the Diking Commissioner's approval-in-principle for designation of the dike as per the drawings described in Section 3.0.

## **2.2 North Area**

2.2.1 The Forks Development Dike - A leakage test on the chamber was performed and passed on February 21, 1992. Deficiencies regarding modifications to the top of the structure are still outstanding. The Water and Waste Department will be proceeding with application for redesignation of the dike once final acceptance of the gate chamber is issued.

On June 18, 1993, the Water and Waste Department requested approval-in-principle of a dike realignment as a result of a proposed plaza/archaeological dig site at the Forks. On July 21, 1993, the Diking Commissioner granted approval-in-principle for this relocation. The project proceeded as a plaza in 1997 without the archaeological dig site. Therefore, the primary dike alignment was not relocated. Redesignation with this portion of the dike will be part of the whole Forks Development, as above.

2.2.2 Timber Crib Dike - This dike has been replaced by a new earthen dike, which forms part of the extension of Pioneer Boulevard North of the Provencher Bridge (see Section 5.1.1d)). This work proceeded in late 1998 as part of the construction related to the new baseball facility on the North side of Water Avenue. The Acting Diking Commissioner granted approval for realignment of the Primary Line of Defence on September 14, 1998.

## **2.3 South Area**

- 2.3.1 Plaza Drive and Adamar Road Dikes - Easements have been secured for the dike between Plaza Drive and Bishop Grandin, and for the dike from Adamar Road to Plaza Drive. The Water and Waste Department has surveyed and will be preparing drawings of a portion of Bishop Grandin Boulevard to link the Plaza Drive dike to the D'Arcy Drive dike. On November 8, 1999, the Water and Waste Department requested the Diking Commissioner's approval-in-principle for designation of the dike as per the drawings described in Section 3.0. This includes the dedesignation of those portions of the dike becoming redundant along Pembina Highway, University Crescent, Agassiz Drive and Glengarry Drive.
- 2.3.2 St. Norbert Daycare Dike - The St. Norbert Daycare proposed the installation of playground equipment on a portion of the primary dike. The Water and Waste Department provided a drawing showing where the new dike is to be realigned to by-pass equipment. Upon completion of all drawings, this Department will proceed with application for redesignation.
- 2.3.3 St. Norbert School Dike - During the 1997 Spring Flood event, a permanent earth dike was constructed through the Seine River School Division property extending from the existing dike South of the St. Norbert Cemetery at the East to Rue Campeau to the West. On November 8, 1999, the Water and Waste Department requested the Diking Commissioner's approval-in-principle for designation of the dike as per the drawings described in Section 3.0.
- 2.3.4 St. Norbert Dike - During the 1997 Spring Flood event, the permanent earth dike was raised from the South end of the Lord Avenue right-of-way to the North end of the Rue St. Pierre right-of-way. The St. Norbert dike as well as the St. Norbert Cemetery and Seine School Division dikes (Section 2.3.3), provides for a continuous length of dike which will protect in excess of 50 additional properties. The Water and Waste Department will be proceeding with application for designation of the dike once all drawings described in Section 3.0 are complete for this area and easements are secured.

### **3.0 PRIMARY LINE OF DEFENCE (PLD) MAPPING**

The Water and Waste Department is continuing a project initiated in 1986 to produce plan/profile drawings of the City's 115 kilometres of primary dikes. These drawings will update the plan/profiles prepared by the Provincial Water Control and Conservation Branch in 1967 in a modern, revisable format. The drawings will also identify deficiencies in the diking system, location of manholes, pipes, catch basins, outfalls and control chambers which breach the dike, and areas where the dike must be realigned to keep pace with new development. Approximately 120 plan/profile drawings at a scale of 1:2000 will be produced.

Initially, aerial photographic mylars were produced and were to serve as base plans for the project. Underground services, street names, dike alignment, chainages, dike elevations, etc., were to be plotted manually on these aerial mylars. The PLD maps for North East District including cross-section drawings were completed manually. Upon completion of these maps, it was decided that this project shift from conventional drafting into computer aided drafting. Some advantages for the change into AutoCAD are:

- 1) the base information will be supplied by the City's Property and Development Services Department. This digital data was produced by Property and Development Services for the City's Land Base Information System and is therefore accurate and available at no cost. The provision of this information will expedite drawing production;
- 2) AutoCAD provides consistency and clarity to the drawings;
- 3) future revisions to these drawings can be easily updated using AutoCAD;
- 4) AutoCAD provides the flexibility of plotting drawings accurately at any scale, for example the Operations Department may prefer smaller prints for field use.

The project is divided into 7 drawing series corresponding to the different sides of the Rivers. The entire project is now 95% complete. The Series are described as follows:

- Series 100 contains 16 drawings covering the West side of the Red River from the Forks north to the City limits, and is 100% complete.
- Series 200 contains 8 drawings covering the North side of the Assiniboine River from St. James Street East to the Forks, and is 100% complete.



- Series 300 contains 8 drawings covering the South side of the Assiniboine River from Kenaston Boulevard East to the Forks, and is 100% complete.
- Series 400 contains 28 drawings covering the West side of the Red River from St. Norbert North to the Forks, and is 100% complete.
- Series 500 contains 26 drawings covering the East side of the Red River from the Floodway North to the junction of the Seine River, and is 90% complete.
- Series 600 contains 16 drawings covering the West side of the Seine River from the Floodway North to the junction of the Red River, and is 90% complete.
- Series 700 contains 17 drawings covering the East side of the Seine and Red rivers from the Floodway North to the City limits, and is 90% complete.

Further to the recommendations of the Manitoba Commission Report (June 1998) and the subsequent responses by the Diking Commissioner (1998 Annual Report of the Diking Commissioner – Appendix E), on November 8, 1999, the Water and Waste Department of the City of Winnipeg requested the Diking Commissioner's approval-in-principle for many of the proposed extensions/redesignations to the Primary Line of Defence described in Section 2.0.

#### **4.0 SECONDARY LINE OF DEFENCE (SLD)**

The City of Winnipeg actively planned, prepared for and undertook specific flood protection activities as necessary in response to the high river levels and overland flooding in the Spring of 1997. For the "Flood of the Century," the City protected over 800 properties with temporary secondary dikes, most with 8.1 million sandbags and 50 locations with earthfill (600,000 m<sup>3</sup>).

As a result of the Canada-Manitoba-City of Winnipeg Agreement on Secondary Diking Enhancements (November, 1999), \$11.1 million has been allocated to undertake three initiatives related to permanent secondary dikes. These are:

- 1) community ring dike sites feasibility study (\$400,000);
- 2) construction of community ring dikes (\$6.3 million), and;
- 3) construction of flood proofing works at individual sites (\$4.4 million).

The City of Winnipeg has also drafted a "Secondary Dike By-law" that is intended to protect the integrity of existing permanent dikes and to establish a diking corridor at locations where temporary secondary dikes would be required in an emergency. The latter is intended to prevent obstructions, such as decks or garages, that would impede the timely erection of a temporary dike.

## **5.0 RESPONSES TO DIKING COMMISSIONER'S QUESTIONNAIRE**

The following are the responses from the Public Works Department and the Water & Waste Department:

### **5.1 Engineering Division – Public Works Department.**

#### **5.1.1 For the Reporting Year.**

- a) There were no difficulties or problems encountered.
- b) There was no maintenance or repairs carried out on the sewer system.
- c) A new outfall was constructed at Lombard Avenue and the existing gates were refurbished.
- d) The construction of Pioneer Boulevard on the primary dike was completed. The primary dike was restored and accepted.

#### **5.1.2 Proposed Plans for Future.**

- a) To continue monitoring existing slope indicators.
- b) To stabilize the Henderson Highway roadway embankment at the Bunn's Creek in 2000.

#### **5.1.3 Riverbank Stability.**

- a) The monitoring of slope indicators was undertaken at the following riverbank locations: Kildonan Bridge, Main Street Bridge, and Norwood Bridge.
- b) The monitoring of riverbank erosion was undertaken at all river crossings. Erosion was unremarkable in 1999.
- c) There were no remedial works undertaken or completed.

#### **5.1.4 Availability and Location of Proposed Borrow Pits.**

- a) There was no change to the availability and location of proposed borrow pits.



## **5.2 Engineering Division - Water & Waste Department.**

### **5.2.1 Jessie Flood Station**

- The existing gate chamber was expanded.
- The flapgate & sluicagate were relocated.
- The top of the chamber was built to the 300 year flood level.

### **5.2.2 Chataway Gate Chamber**

- A new gate chamber was constructed, complete with a flapgate and sluicagate.
- The top of the chamber was built to the 300 year flood level.

## **5.3 Local Services Division - Water & Waste Department.**

**5.3.1** There were no problems encountered with any sewer facilities with respect to high river levels or leaking gates.

**5.3.2** There were no repairs were carried out on the sewer system to maintain or improve flood protection.

**5.3.3** There were no construction or upgrading projects on any of the sewer outfall structures. However, two new culverts with control gates through the dike at the east end of Parkwood Place were discovered. These culverts were not documented and it is suspected that they were constructed by the Armed Forces when the dike was constructed for the 1997 flood.

**5.3.4** There were no other modifications made to the sewer system or diking system.



THE UNIVERSITY OF MANITOBA

PHYSICAL PLANT

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January 4, 2000

Mr. Rick Hay, P. Eng.  
Dyking Commissioner  
Water Resources Branch  
Box 19 - 200 Sauteaux Crescent  
Winnipeg, Manitoba  
R3J 3W3

Dear Mr. Hay:

Subject: **Dyking Commissioner's 1999 Annual Report**

The following is in response to the questionnaire for the Annual Report on the Primary Dyking Systems within the City of Winnipeg.

1. **1999 Calendar Year**

- a) Difficulties and problems encountered.      None
- b) Maintenance and repairs carried out.

Normal routine maintenance on all gates and pumping station. #1 Outfall discharge line has separated 10 feet from outlet. Repairs took place in January 1999 as soft ground conditions prohibited the use of large equipment prior to freeze up.

- c) New Sewer Outfall Gate Structures constructed.

A new sewer outfall gate structure is in the process of being constructed. scheduled completion is February 2000.

- d) Improvements and modifications carried out.

Installation of rip-rap around outfall #1.

2. **Proposed Plans for Future**

There are no further plans for new structures or modifications at this time.

- a) Evaluation of river bank stability in critical areas.

There are no evaluation studies underway or planned at this time.

- b) Monitoring erosion of river banks in critical areas.

Monitoring of riverbanks is conducted regularly at 13 river bank locations. There was no significant erosion detected during 1999.

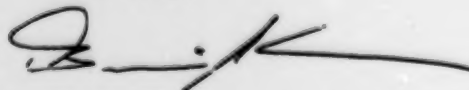
- c) Any remedial works undertaken or completed in the reporting year.

As noted in #1, questions b). c) and d).

3. **Availability and Location of Proposed Borrow Pits.**

No changes are suggested in the availability or location of proposed borrow pit for 2000.

Yours truly,



Brian J. Rivers  
Director of Physical Plant

bjr/nl

cc: Mr. M. McAdam, Vice-President (Administration)  
Mrs. D. McCallum, Associate Vice-President (Administration)